

WHAT IS CLAIMED IS:

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1. An apparatus, comprising:

a first sharing unit that shares a print
environment thereof with other apparatuses,

wherein

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the first sharing unit includes:

a connection management unit that manages
the connecting of the first sharing unit to a second
sharing unit of another apparatus; and

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a transfer unit that transfers at least one
of reservation information and a document related to
a print reservation to the second sharing unit.

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2. The apparatus as claimed in claim 1,

wherein

the connection management unit adds
connection data related to the second sharing unit to
25 service data including other sharing units that are

connected to the first sharing unit in response to a connection request from the second sharing unit.

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3. The apparatus as claimed in claim 1,
wherein

the connection management unit deletes
10 connection data related to the second sharing unit to
service data including other sharing units that are
connected to the first sharing unit in response to a
disconnection request from the second sharing unit.

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4. The apparatus as claimed in claim 2,
wherein

20 the connection data related to the second
sharing unit added to the service data are managed as
one of upper level data, same level data, and lower
level data depending on a relation between the first
sharing unit and the second sharing unit.

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5. The apparatus as claimed in claim 2,
5 further comprising:
a service data storage unit that stores the
service data.

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6. The apparatus as claimed in claim 2,
wherein
the first sharing unit further comprises:
15 an acquisition unit that acquires the
service data from the second sharing unit.

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7. The apparatus as claimed in claim 1,
wherein
the first sharing unit further comprises:
a consistency check unit that checks
25 consistency of a connection state in which the second

sharing unit is connected to the first sharing unit
and a disconnection state in which the second sharing
unit is disconnected from the first sharing unit.

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8. The apparatus as claimed in claim 1,
further comprising:

10 a reservation data storage unit that stores
the reservation information and the document.

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9. The apparatus as claimed in claim 1,
further comprising:

 a document acquisition unit that acquires
the document.

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10. The apparatus as claimed in claim 1,
25 further comprising:

a document management service unit that
provides a service for managing the document.

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11. The apparatus as claimed in claim 1,
further comprising:

a document storage unit that stores the
10 document.

15 12. The apparatus as claimed in claim 1,
further comprising:

a print service unit that provides service
related to printing.

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13. The apparatus as claimed in claim 1,
further comprising:

25 a print unit that prints the document.

5 14. A method of providing a sharing
service in which a first sharing unit shares a print
environment thereof with a second sharing unit, the
method comprising the steps of:

 managing the connecting and the
10 disconnecting of the second sharing unit; and
 transferring at least one of reservation
information and a document related to a print
reservation to the second sharing unit.

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 15. The method as claimed in claim 14,
further comprising the step of:

20 adding data related to the second sharing
unit to service data including data related to other
sharing units to which the first sharing unit can
refer, in response to a connection request from the
second sharing unit.

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16. The method as claimed in claim 14,
5 further comprising the step of:
deleting data related to the second sharing
unit from service data including data related to
other sharing units to which the first sharing unit
can refer, in response to a disconnection request
10 from the second sharing unit.

15 17. The method as claimed in claim 15,
wherein
the data related to the second sharing unit
added to the service data are managed as one of upper
level data, same level data, and lower level data
20 depending on a relation between the first sharing
unit and the second sharing unit.

18. The method as claimed in claim 14,
further comprising the step of:

checking consistency of a connection state
in which the second sharing unit is connected to the
5 first sharing unit and a disconnection state in which
the second sharing unit is disconnected from the
first sharing unit.

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19. A computer program that causes a
computer to share a print environment thereof with
another computer, the computer program comprising the
15 steps of:

managing connecting and disconnecting of
the other computer with the computer; and

transferring at least one of reservation
information and a document related to a print
20 reservation to the other computer.

25 20. The computer program as claimed in

claim 19, further comprising the step of:

adding data related to the other computer
to service data including data related to third
computers to which the computer can refer, in
5 response to a connection request from the other
computer.

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21. The computer program as claimed in
claim 19, further comprising the step of:

deleting data related to the other computer
from service data including data related to third
15 computers to which the computer can refer, in
response to a disconnection request from the other
computer.

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22. The computer program as claimed in
claim 20,

wherein

25 the data related to the other computer

added to the service data are managed as one of upper level data, same level data, and lower level data depending on a relation between the computer and the other computer.

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23. The computer program as claimed in
10 claim 19, further comprising the step of:
checking consistency of a connection state
in which the other computer is connected to the
computer and a disconnection state in which the other
computer is disconnected from the computer.

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24. A computer readable recording medium
20 that stores the computer program as claimed in claim
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25. An apparatus, comprising:
a first sharing unit that shares a print
environment thereof with other apparatuses,
wherein

5 the first sharing unit includes:
a search unit that searches a print
location; and

a transfer unit that transfers at least one
of reservation information and a document related to
10 a print reservation to a second sharing unit.

15 26. The apparatus as claimed in claim 25,
wherein

the search unit further comprises:
a route information acquisition unit that
acquires route information about a route to the print
20 location.

25 27. The apparatus as claimed in claim 25,

wherein

the search unit further comprises:

a service data acquisition unit that
acquires service data including data about
5 referential relation between sharing units from a
third sharing unit.

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28. The apparatus as claimed in claim 25,
wherein

the reservation information includes
document identification information for identifying
15 the document and document use permission information
for being permitted to use the document.

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29. The apparatus as claimed in claim 25,
wherein

the reservation information includes print
location identification information for identifying
25 the print location and route information to the print

location.

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30. The apparatus as claimed in claim 25,
wherein

the reservation information includes
printer identification information for identifying a
10 printer.

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31. The apparatus as claimed in claim 25,
wherein

the reservation information includes
information about a print condition.

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32. The apparatus as claimed in claim 25,
wherein

25 the first sharing unit further comprises:

a data adding unit that adds, in response to a connection request from the second sharing unit, data related to the second sharing unit to service data including sharing units other than the first sharing unit to which the first sharing unit can refer.

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33. The apparatus as claimed in claim 25, wherein

the first sharing unit further comprises:

a data deleting unit that deletes, in response to a disconnection request from the second sharing unit, data related to the second sharing unit from the service data including data related to sharing units other than the first sharing unit to which the first sharing unit can refer.

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34. The apparatus as claimed in claim 27, wherein

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the data related to the second sharing unit added to the service data are managed as one of upper level data, same level data, and lower level data depending on a relation between the first sharing
5 unit and the second sharing unit.

10 35. The apparatus as claimed in claim 25,
further comprising:

a service data storage unit that stores the service data including data related to a referential relation between the first sharing unit and other
15 sharing units.

20 36. The apparatus as claimed in claim 25,
wherein

the first sharing unit further comprises:
a document acquisition unit that acquires
the document.

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5 37. The apparatus as claimed in claim 25,
 wherein
 the first sharing unit further comprises:
 a printer data acquisition unit that
acquires printer data.

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 38. The apparatus as claimed in claim 37,
 wherein
15 the printer data are managed by a
corresponding sharing unit that shares a print
environment thereof with other apparatuses.

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 39. The apparatus as claimed in claim 37,
 wherein
 the printer data are managed by a print
25 service providing unit that provides a print service.

5 40. The apparatus as claimed in claim 25,
 wherein
 the first sharing unit further comprises:
 a function information acquisition unit
10 that acquires function information of a printer.

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 41. The apparatus as claimed in claim 25,
15 further comprising a data storage unit that stores at
 least one of reservation information and a document
 related to the print reservation.

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 42. The apparatus as claimed in claim 25,
 further comprising a document management service
 providing unit that manages the document.

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43. The apparatus as claimed in claim 25,
5 further comprising a document storage unit that
stores the document.

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44. The apparatus as claimed in claim 25,
further comprising a print service providing unit
that provides a print service.

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45. The apparatus as claimed in claim 25,
further comprising a print unit that prints the
20 document.

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46. A method of providing a sharing

service in which a first sharing unit shares print environment thereof with a second sharing unit, the method comprising the steps of:

- searching for a print location; and
- 5 transferring at least one of reservation information and a document related to a print reservation to the second sharing unit.

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- 47. The method as claimed in claim 46, wherein the step of searching for the print
- 15 location further comprises the step of acquiring route information of a route to the print location.

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- 48. The method as claimed in claim 46, wherein the step of searching for the print location further comprises the step of acquiring service data including data about referential
- 25 relations between sharing units from a third sharing

unit.

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49. The method as claimed in claim 46,
wherein the reservation information
includes document identification information for
identifying the document and document use permission
10 information for being permitted to use the document.

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50. The apparatus as claimed in claim 46,
wherein
the reservation information includes print
location identification information for identifying
the print location and route information to the print
20 location.

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51. The apparatus as claimed in claim 46,

wherein

the reservation information includes
printer identification information for identifying a
printer.

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52. The apparatus as claimed in claim 46,

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wherein

the reservation information includes
information about a print condition.

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53. The method as claimed in claim 46,

wherein

the first sharing unit adds, in response to
a connection request from the second sharing unit,
data related to the second sharing unit to service
data including sharing units other than the first
sharing unit to which the first sharing unit can
refer.

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5 54. The method as claimed in claim 46,
wherein

the first sharing unit deletes, in response
to a disconnection request from the second sharing
unit, data related to the second sharing unit from
the service data including data related to sharing
10 units other than the first sharing unit to which the
first sharing unit can refer.

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55. The method as claimed in claim 46,
wherein

the data related to the second sharing unit
added to the service data are managed as one of upper
20 level data, same level data, and lower level data
depending on a relation between the first sharing
unit and the second sharing unit.

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56. The method as claimed in claim 46,
further comprising the step of acquiring the document.

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57. The method as claimed in claim 46,
further comprising the step of:

10 acquiring printer data including data
related to printers.

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58. The method as claimed in claim 57,
wherein

 the printer data are managed by a
corresponding sharing unit that shares a print
20 environment thereof with other apparatuses.

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59. The method as claimed in claim 57,

wherein

the printer data are managed by a print
service providing unit that provides a print service.

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60. The method as claimed in claim 46,
further comprising the step of:

10 acquiring function information of a printer.

15 61. The method as claimed in claim 46,
further comprising the step of:

receiving a reservation request for a print
reservation.

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62. The method as claimed in claim 46,
further comprising the step of receiving a print

25 request.

5 63. A computer program that causes a
computer to share a print environment thereof with
another computer, the computer program comprising the
steps of:

 searching for a print location; and
10 transferring at least one of reservation
information and a document related to a print
reservation to the other computer.

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 64. A computer readable recording medium
that stores the computer program as claimed in claim
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 65. A service providing apparatus,
25 comprising:

a screen data providing unit that provides data related to a screen to a user terminal in response to a request from the user terminal; and

a print reservation request transmission unit that transmits a reservation request to a print environment sharing service providing unit in response to the request from the user terminal,

wherein

the service providing apparatus is included in a print environment sharing service providing system, the system further including:

at least one print environment sharing service providing unit including a print environment sharing service providing unit that provides a sharing service of a print environment; and the user terminal.

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66. The service providing apparatus as claimed in claim 65,

wherein

the screen is a document selection screen for selecting at least one of a print reservation and

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a document.

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67. The service providing apparatus as
claimed in claim 65,

wherein

the screen is a document overview screen
10 that displays an overview of print reservations or
documents to be printed.

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68. The service providing apparatus, as
claimed in claim 65,

wherein

the screen is a print location selection
20 screen for selecting a print location.

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69. The service providing apparatus as

claimed in claim 65,

wherein

the screen is a map screen related to a
print location.

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70. The service providing apparatus as
10 claimed in claim 65,

wherein

the screen is a printer selection screen
for selecting a printer.

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71. The service providing apparatus as
claimed in claim 65,

20 wherein

the screen is a print condition selection
screen for selecting a print condition.

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72. The service providing apparatus as
claimed in claim 65,

wherein

5 the print environment sharing service
providing unit adds, in response to receipt of a
connection request from another print environment
sharing service providing unit, data related to the
other print environment sharing service providing
10 unit to service data including data related to other
print environment service providing units to which
the print environment sharing service providing unit
can refer.

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73. The service providing apparatus as
claimed in claim 65,

20 wherein

 the print environment sharing service
providing unit deletes, in response to receipt of a
disconnection request from another print environment
sharing service providing unit, data related to the
25 other print environment sharing service providing

unit to service data including data related to other
print environment service providing units to which
the print environment sharing service providing unit
can refer.

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74. The service providing apparatus as
10 claimed in claim 72,
wherein
the data related to the other sharing unit
added to the service data are managed as one of upper
level data, same level data, and lower level data
15 depending on a relation between the print environment
sharing service unit and the other print environment
sharing service unit.

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75. The service providing apparatus as
claimed in claim 65, further comprising:
a service data acquisition unit that
25 acquires, in response to a request from the user

terminal, service data including data related to
referential relations between print environment
sharing service providing units from the print
environment sharing service providing units.

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76. The service providing apparatus as
10 claimed in claim 65, further comprising:

a printer data acquisition unit that
acquires, in response to receipt of a request from
the user terminal, printer data including data
related to printers to which the print environment
15 sharing service providing unit can refer from the
print environment sharing service providing unit.

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77. The service providing apparatus as
claimed in claim 65, further comprising:

a function information acquisition unit
that acquires, in response to receipt of a request
25 from the user terminal, function information related

to functions of printers from the print environment sharing service providing unit.

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78. The service providing apparatus as claimed in claim 65, further comprising:

a document use permission information
10 acquisition unit that acquires, in response to receipt of a request from the user terminal, document use permission information for permitting the use of the document from a document management service providing unit that provides a service related to
15 management of documents.

20 79. The service providing apparatus as claimed in claim 78, further comprising the document management service providing unit.

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80. The service providing apparatus as claimed in claim 78, further comprising a document storage unit that stores the document.

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81. The service providing apparatus as claimed in claim 65, further comprising:

a print start request transmitting unit that transmits, in response to receipt of a request from the user terminal, a request to start printing, to the print environment sharing service providing unit.

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82. The service providing apparatus as claimed in claim 65, further comprising the print environment sharing service providing unit.

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83. The service providing apparatus as claimed in claim 65, further comprising a print service providing unit that provides a print service.

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84. The service providing unit as claimed in claim 65, further comprising a print unit.

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85. A method of providing a service for sharing a print environment, comprising the steps of:
providing data related to a screen to a user terminal in response to a request from the user terminal; and

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transmitting a reservation request to a print environment sharing service providing unit in response to the request from the user terminal,

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wherein

the service providing apparatus is included in a print environment sharing service providing

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system, the system further including:

at least one print environment sharing
service providing unit including a print environment
sharing service providing unit that provides a
5 sharing service of print environment; and
the user terminal.

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86. The method as claimed in claim 85,
wherein
the screen is a document selection screen
for selecting at least one of a print reservation and
15 a document.

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87. The method as claimed in claim 85,
wherein
the screen is a document overview screen
that displays an overview of print reservations or
documents to be printed.

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5 88. The method as claimed in claim 85,
 wherein
 the screen is a print location selection
screen for selecting a print location.

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 89. The method as claimed in claim 85,
 wherein
 the screen is a map screen related to a
15 print location.

20 90. The method as claimed in claim 85,
 wherein
 the screen is a printer selection screen
for selecting a printer.

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91. The method as claimed in claim 85,
wherein

5 the screen is a print condition selection
screen for selecting a print condition.

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92. The apparatus as claimed in claim 85,
wherein

the print environment sharing service
providing unit adds, in response to receipt of a
15 connection request from another print environment
sharing service providing unit, data related to the
other print environment sharing service providing
unit to service data including data related to other
print environment service providing units to which
20 the print environment sharing service providing unit
can refer.

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93. The method as claimed in claim 85,
wherein

the print environment sharing service
providing unit deletes, in response to receipt of a
5 disconnection request from another print environment
sharing service providing unit, data related to the
other print environment sharing service providing
unit to service data including data related to other
print environment service providing units to which
10 the print environment sharing service providing unit
can refer.

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94. The method as claimed in claim 92,
wherein

the data related to the other sharing unit
added to the service data are managed as one of upper
20 level data, same level data, and lower level data
depending on a relation between the print environment
sharing service unit and the other print environment
sharing service unit.

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95. The method as claimed in claim 85,
wherein

5 the service providing apparatus further
comprises the print environment sharing service
providing unit.

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96. A computer program that causes a
computer to perform the method as claimed in claim 85.

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97. A computer readable recording medium
that stores the computer program as claimed in claim
20 96.

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98. The apparatus as claimed in claim 37,

further comprising a printer data storage unit that stores the printer data.

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99. The method as claimed in claim 46, further comprising the step of transmitting a reservation request about printing.

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100. The method as claimed in claim 46, further comprising the step of transmitting a print request.

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101. The service providing apparatus as claimed in claim 65, further comprising:

a document overview acquisition unit that acquires, in response to receipt of a request from the user terminal, information about a document

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overview from a document management service providing
unit that provides a management service of a document.